Public Health Watch

Metro Public Health Dept
Nashville/Davidson County

A BI-MONTHLY PUBLIC HEALTH NEWSLETTER OF THE METRO PUBLIC HEALTH DEPARTMENT

ISSN - 1009 - 7423

Volume 7, Number 2 March/April 2003

Perinatal Periods of Risk: A New Approach to an Age Old Problem, Part III

Brook McKelvey, MA, MPH, Maternal Child Health Epidemiologist

In the last issue of *Public Health Watch*, the methodology of the Perinatal Periods of Risk (PPOR) approach was presented and explained. It demonstrated how fetal and infant mortality data are partitioned into categories according to age at death and birth weight. The results of this analysis can inform communities about where efforts should be focused in order to reduce fetal and infant mortality.

The results of applying the PPOR approach to Davidson County are shown in Figures 1 and 2. Together, these figures present the number of deaths and the mortality rates per 1,000 live births and fetal deaths for Nashville during the years from 1995-1997. During those years, there were a total of 243 feto-infant deaths. Of those 243 deaths, 91 were very low birth weight (VLBW) and fall into the Maternal Health and Prematurity category: 52 into Maternal Care, 25 in Newborn Care, and 75 in Infant Health. The corresponding mortality rates are 3.7 for Maternal Health and Prematurity, 2.1 for Maternal Care, 1.0 for Newborn Care, and 3.0 for Infant Health. Judging from this initial analysis, Maternal Health and Prematurity and Infant Health are the categories that contribute the most to the overall feto-infant mortality rate (9.8).

Examining mortality by race produces the feto-infant mortality maps depicted in Figures 3-5. Blacks have the highest overall mortality rate of 14.0 per 1,000 live births and fetal deaths, compared to 8.1 for whites and 12.9 for non-whites. By category, Maternal Health and Prematurity and Infant Health continue to be the largest contributors to mortality across racial categories. Blacks have the highest rates with a mortality rate of 6.1 for Maternal Health and Prematurity and 3.8 for the Infant Health category. Non-whites (black and other) display the same pattern with rates of 5.6 for Maternal Health and Prematurity and 3.6 for Infant Health. Whites have the same feto-infant mortality rate of 2.7 for both categories.

continued on page two

In This Issue:

A New Set of EARS: Surveillance for Bioterrorism and Beyond

Joseph Schuchter, MPH, Epidemiologist

Population-based disease surveillance is critical in detecting abnormal health events and trends. Traditional passive surveillance methods relying on physician and laboratory reporting of specific diseases and conditions, as required by law, continue to be the mainstay for informing and guiding public health officials and policy makers. However, the immediate effectiveness of this type of surveillance has often been limited by delayed or incomplete reporting of diagnoses and test results. For infectious diseases, time is the most critical element in mitigating an outbreak. Early recognition of unusual disease patterns, yielding a rapid, targeted response, is the most effective means of preventing and limiting the impact of outbreaks in our community. With this goal in mind, a new initiative is underway throughout Nashville - Davidson County, the state, and the nation.

This nationwide initiative is focused on implementing enhanced passive surveillance, commonly referred to as syndromic surveillance. Other terms, such as pre-diagnosis surveillance, health-indicator surveillance, and disease early warning system, reflect the nature of this new version of an established public health tool. Although much of the initial focus has been on the detection of events of bioterrorism, stakeholders are quickly realizing the

continued on page four

According to these results, the major contributors to the overall feto-infant mortality rate in Nashville are deaths among VLBW babies and postneonatal deaths greater than 1,500 grams. Additionally, mortality is not evenly distributed between population groups as evidenced by the fact that blacks have both the highest fetal and infant mortality rates in Nashville.

The PPOR approach has never been solely about data and results. Instead, it is about taking the results and applying the information learned to find ways to improve fetal and infant mortality rates. These few results clearly indicate that Davidson County has highest mortality rates in the Maternal Health and Prematurity category and Infant Health categories compared to the Maternal Care and Newborn Care categories. Improvements in mortality for the first category may be achieved by reducing prematurity, focusing on issues related to preconceptional health for women, addressing unhealthy behaviors, and ensuring proper perinatal care. Improvements in the second category may be achieved by addressing proper sleep position for infants among new parents, encouraging breast-feeding, and finding ways to prevent infantile injury.

The results presented in this article are only a small portion of the entire analysis that was conducted. The detailed analysis can be found in the soon to be released Metropolitan Public Health Department report *Perinatal Periods of Risk: A Community Tool for Addressing Fetal and Infant Mortality*. Further information about this project may be obtained by contacting the Division of Child and Adolescent Health at (615) 340-5614.

Figure 1. Feto-infant Mortality Map: Number of Deaths for All Races, Nashville, TN, 1995-1997

	Fetal	Neonatal	Postneonatal
500-1,499g VLBW	Maternal Health/Prematurity 91		
1,500+g HBW	Maternal Care 52	Newborn Care 25	Infant Health 75

Total Feto-infant deaths: 243
Total Fetal Deaths and Live Births: 24,836

Figure 2. Feto-infant Mortality Map: Mortality Rates per 1,000 Fetal Deaths plus Live Births for All Races, Nashville, TN, 1995-1997

	Fetal	Neonatal	Postneonatal
500-1,499g VLBW	Maternal Health/Prematurity 3.7		
1,500+g HBW	Maternal Care 2.1	Newborn Care 1.0	Infant Health 3.0

Total Feto-infant deaths: 243
Total Fetal Deaths and Live Births: 24,836
Total Feto-infant mortality rate: 9.8

Figure 3. Feto-infant Mortality Map: Number of Deaths and Mortality Rates per 1,000 Fetal Deaths plus Live Births, Whites, Nashville, TN, 1995-1997

	Fetal	Neonatal	Postneonatal
500-1,499g VLBW	Maternal Health/Prematurity 44 deaths 2.7		
1,500+g HBW	Maternal Care 28 deaths 1.7	Newborn Care 17 deaths 1.0	Infant Health 45 deaths 2.7

Total Feto-infant deaths: 134
Total Fetal Deaths and Live Births: 16,462
Total Feto-infant mortality rate: 8.1

Figure 4. Feto-infant Mortality Map: Number of Deaths and Mortality Rates per 1,000 Fetal Deaths plus Live Births, Non-whites, Nashville, TN, 1995-1997

	Fetal	Neonatal	Postneonatal
500-1,499g VLBW	Maternal Health/Prematurity 47 deaths 5.6		
1,500+g HBW	Maternal Care 23 deaths 2.7	Newborn Care 8 deaths 1.0	Infant Health 30 deaths 3.6

Total Feto-infant deaths: 108
Total Fetal Deaths and Live Births: 8,393
Total Feto-infant mortality rate: 12.9

Figure 5. Feto-infant Mortality Map: Number of Deaths and Mortality Rates per 1,000 Fetal Deaths plus Live Births, Blacks, Nashville, TN, 1995-1997

	Fetal	Neonatal	Postneonatal
500-1,499g VLBW	Maternal Health/Prematurity 45 deaths 6.1		
1,500+g HBW	Maternal Care 23 deaths 3.1	Newborn Care 8 deaths 1.1	Infant Health 28 deaths 3.8

Total Feto-infant deaths: 104
Total Fetal Deaths and Live Births: 7,430
Total Feto-infant mortality rate: 14.0

National Public Health Week

Today in the U.S. according to the American Public Health Association, approximately two-thirds of all adults are overweight or obese. The proportion of children who are overweight has tripled since 1980. The epidemic is not limited to any particular age, race, ethnic group, or gender.

April 7 - 13, 2003 Is National Public Health Week

Each year the American Public Health Association partners with other public health organizations, agencies, and associations to plan activities to celebrate the work of public health in communities across the U.S. The theme of this year's celebration is overweight and obesity.

In a study published in the January 1, 2003 issue of the Journal of the American Medical Association (JAMA), the Centers for Disease Control and Prevention (CDC) reported that obesity climbed from 19.8 percent of American adults to 20.9 percent of American adults between 2000 and 2001.

Currently, more than 44 million Americans are considered obese by body mass index (BMI), reflecting an increase of 74 percent since 1991. BMI is a single number that is a common method of tracking weight problems and obesity among adults. BMI is a mathematical formula in which a person's body weight in kilograms is divided by the square of his or her height in meters (weight/height ^{2}).

The study found strong and significant associations between overweight, obesity, diabetes, high blood pressure, high cholesterol, asthma, and arthritis. Compared with adults at a healthy weight, people with a BMI of 40 or higher had an increased risk of being diagnosed with diabetes (7.37 times greater), high blood pressure (6.38 times greater), high cholesterol levels (1.88 times greater), asthma (2.72 times greater), and arthritis (4.41 times greater).

Other study results found that African Americans had higher rates of obesity (31.1 percent) than did members of other racial and ethnic groups. People

continued on page five

dual-use nature of this tool. Whether flu, gastrointestinal illness, or anthrax, whether naturally occurring or the result of bioterrorism, syndromic surveillance provides the means to rapidly detect such events. A number of systems in other cities have been operational for years and provide excellent models upon which to build (1).

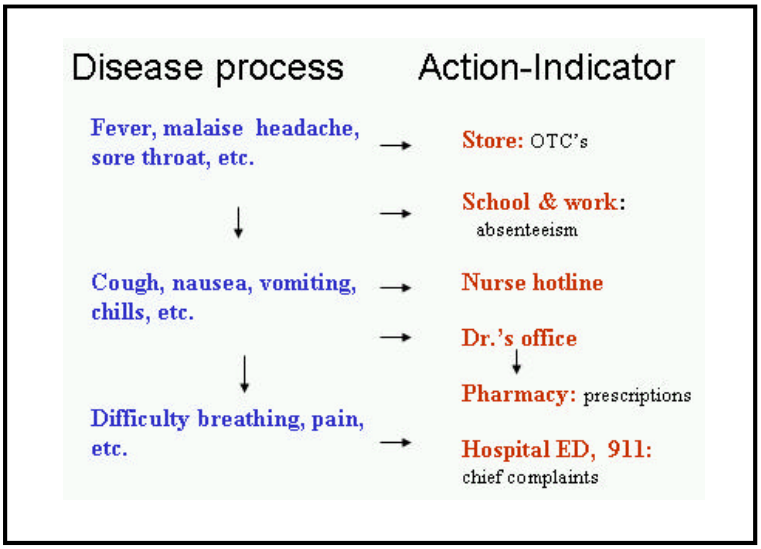
Syndromic surveillance is flexible in that the methods can be adjusted to accommodate detection objectives. Thresholds can be lowered based on threat information to detect a small number of cases or a specific syndrome of interest. During a recognized outbreak of disease, this system can help define the scope, geographic characteristics, and time frame of an event not readily obvious to the frontline clinician or individual hospital.

The most novel facet of syndromic surveillance is its use of a multitude of existing data sources. These sources include 911 calls, triage-level information from emergency rooms, school and workplace absenteeism reports, and pharmaceutical sales, among others. This type of information is, in individuals, representative of prodromal phases of diseases (Figure 1). In a population, this information is collected and analyzed in "real time" using statistical methods to look for unusual changes in the distribution and frequency of health events over time, place, and person. This type of analysis provides a comprehensive real time picture of adverse health events among the citizens throughout Davidson County.

The nature of this type data often leads people to question its accuracy. However, there have been many studies comparing this "syndromic" data to a gold standard. One such study recently found minimal variation between hospital emergency room chief complaints used in syndromic surveillance and the discharge diagnosis (2). Other studies have shown similar results for the other data sources (3).

Traditional surveillance has too often been a one-way street, or more accurately a crowded two-way street. In other words, the collection and feedback process does not occur in a manner timely enough to detect the first cases of a potential disease outbreak. Syndromic surveillance analyses are designed to be returned to clinicians in the field immediately. Population-level analyses will be automatically posted on a secure website. In addition to the community-wide perspective, each reporting entity will have access to their own results on a secure page. This will give clinicians in the community a comprehensive real-time picture of disease incidence, providing a background for their observations and a tangible index of suspicion. The Metro Public Health Alert Network (4) may also serve as a means of rapidly disseminating critical information to the health community. The Metro Public Health Department (MPHD) constantly monitors surveillance information, and a Public Health Investigation team is prepared to respond to any event.

continued on page five



A New Set of EARS: Surveillance for Bioterrorism and Beyond...continued from page four

So we see that syndromic surveillance is "enhanced" surveillance because of the real time nature of the collection, analysis, and feedback process. Yet it remains "passive" because it uses existing information. Once initial development is complete, it does not require additional personnel time; all information from the reporting entity is automatically forwarded to MPHD using information systems.

It is important to realize that syndromic surveillance is neither designed nor intended to replace traditional surveillance, but to supplement it. It is also neither designed nor intended to replace the eyes and ears of clinicians. Clinicians will always be the front line of public health surveillance.

The Metro Public Health Department is currently conducting daily surveillance on school absenteeism, 911 calls, and several local emergency departments. MPHD uses a tool called EARS, the Early Aberration Reporting System, to help analyze the data. This program was developed by the Centers for Disease Control and Prevention in conjunction with local health departments. In addition, mapping with Geographic Information Systems is performed.

The feasibility of implementation and continued benefits from this system are obvious. MPHD is continuing to work with hospitals and other entities to expand and improve the system. Now in the midst of a worldwide health alert for severe acute respiratory syndrome (SARS), we are clearly reminded that infectious diseases have no borders. The Nashville - Davidson County syndromic surveillance system will ultimately be connected with a statewide and nationwide system. But first we must build a sustainable system to protect our own community. We are eager to gain your support and feedback on this important initiative.

Please call Joseph Schuchter at 340-2733 for further information.

References:

(1) Lober, WL, et al. Roundtable on Bioterrorism Detection: Information System–based Surveillance. *Journal of the American Medical Informatics Association*. Volume 9 Number 2 Mar / Apr 2002.

(2) Begier, EM Sockwell, D, Branch, LM, Davies-Cole, JO, Jones, LH Edwards, L Casani, JA and Blythe, D. The National Capitol Region's Emergency Department Syndromic Surveillance System: Do Chief Complaint and Discharge Diagnosis Yield Different Results? *Emerging Infectious Diseases.* Vol. 9, No. 3, March 2003.

(3) Wagner, et al, The emerging science of very early detection of disease outbreaks. *J Public Health Management Practice*, 2001 7(6), 51-59.

(4) Warkentin, J. Introducing the Nashville public health alert network. *Public Health Watch.* Vol7/No.1. Nashville Public Health Department; 2003.

April 7 - 13, 2003 Is National Public Health Week...continued from page three

with less than a high school education had higher rates of obesity (27.4 %) than people who had a high school education.

Some health professionals are now calling obesity a national epidemic. Partially attributable to sedentary lifestyles and unhealthy diets, obesity is affecting younger and younger age groups. Fifteen percent of 6 to 19 year olds are now overweight. This number has tripled over the past twenty years. The obesity epidemic is costly in terms of money and lost lives. It is estimated that obesity costs Americans more than $117 billion per year. Dr. Georges Benjamin, executive director of the APHA, estimates that approximately 300,000 deaths in the U.S. each year are related to obesity.

National Public Health Week 2003 will focus on five areas in which communities can work together to reduce obesity, including:

- Increasing physical fitness opportunities for kids;
- Promoting healthier living through better community design, including more walking paths, bike lanes, and parks;
- Offering better opportunities for fitness and healthy eating in the workplace;
- Serving more nutritious options in schools; and
- Providing healthier dining options in local restaurants and markets.

All information taken directly from the APHA's National Public Health Week website at http://www.apha.org/NPHW/ and from the National Center for Chronic Disease Prevention and Health Promotion website at http://www.cdc.gov/nccdphp/dnpa/press/archive/obesity_12_2002.htm. The information was accessed on April 1, 2003.

Reported Cases of Selected Notifiable Diseases for January/February 2003

Disease	Cases Reported in January/February		Cumulative Cases Reported through February	
	2002	2003	2002	2003
AIDS	28	41	28	41
Campylobacteriosis	3	0	3	0
Chlamydia	378	404	378	404
DRSP (Invasive drug-resistant *Streptococcus pneumoniae*	9	3	9	3
Escherichia coli 0157:H7	0	0	0	0
Giardiasis	3	1	3	1
Gonorrhea	225	244	225	244
Hepatitis A	6	0	6	0
Hepatitis B (acute)	2	0	2	0
Hepatitis B (perinatal)	5	4	5	4
HIV	55	39	55	39
Influenza-like Illness	52	826	52	826
Neisseria meningitidis disease	0	0	0	0
Salmonellosis	8	5	8	5
Shigellosis	2	1	2	1
Syphilis (primary and secondary)	14	3	14	3
Tuberculosis	5	10	5	10
VRE (Vancomycin-resistant enterococci)	13	1	13	1

To report a notifiable disease, please contact:

Sexually transmitted diseases: Brad Beasley at 340-5676
AIDS/HIV: Mary Angel-Beckner at 340-5330
Hepatitis B: Denise Stratz at 340-2174
Tuberculosis: Alisa Haushalter at 340-5650
Hepatitis C: Pat Sanders at 340-5632
Vaccine-preventable diseases: Mary Fowler at 340-2168
All other notifiable diseases: Pam Trotter at 340-5632

Return Service Requested

Public Health Watch welcomes feedback, articles, letters, and suggestions. To communicate with *Public Health Watch* staff, please:

Telephone: (615) 340 - 5683
Fax: (615) 340 - 2292
E-mail: nancy.horner@nashville.gov